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Installation
and
Operating
Instructions

CULLIGAN®
MARK 100
AUTOMATIC
WATER CONDITIONER
MODELS FROM 2000

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Printed in USA

Attention Culligan Customer:

The installation, service and maintenance of this equipment should be rendered by a qualified and trained service technician. Your local independently operated Culligan dealer employs trained service and maintenance personnel who are experienced in the installation, function and repair of Culligan equipment. This publication is written specifically for these individuals and is intended for their use.

We encourage Culligan users to learn about Culligan products, but we believe that product knowledge is best obtained by consulting with your Culligan dealer. Untrained individuals who use this manual assume the risk of any resulting property damage or personal injury.

⚠ WARNING - Prior to servicing equipment, disconnect power supply to prevent electrical shock.

⚠ WARNING - If incorrectly installed, operated or maintained, this product can cause severe injury. Those who install, operate, or maintain this product should be trained in its proper use, warned of its dangers, and should read the entire manual before attempting to install, operate or maintain this product.

IF THIS EQUIPMENT IS TO BE USED IN THE TREATMENT OF DRINKING WATER, THE WATER MUST BE MICROBIOLOGICALLY SAFE.

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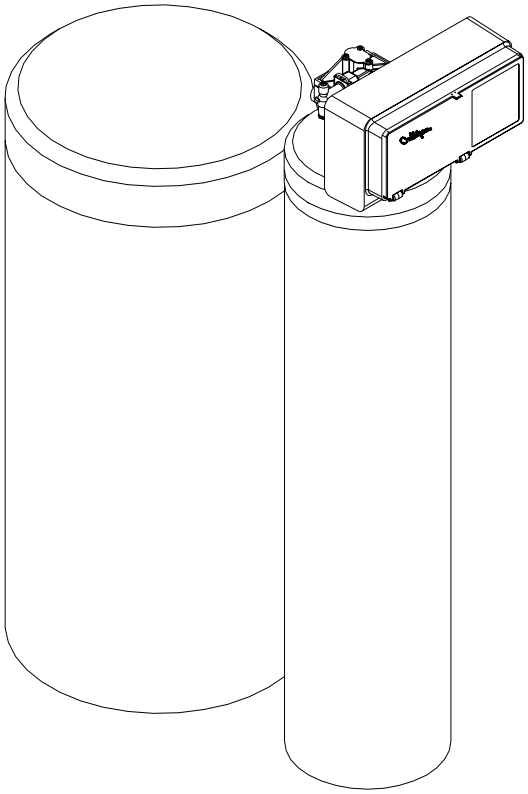

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Introduction

The Culligan® Mark 100 water softeners are tested and validated by WQA against ANSI/NSF Standard 44 for the effective reduction of calcium and magnesium along with Barium and Radium 226/228*.

SAFE PRACTICES

Throughout this manual there are paragraphs set off by special headings.

NOTICE: Notice is used to emphasize installation, operation or maintenance information which is important, but does not present any hazard.

Example: NOTICE: *The nipple must extend no more than 1 inch above the cover plate.*

⚠ **CAUTION**: Caution is used when failure to follow directions could result in damage to equipment or property. Example:

⚠ **CAUTION:** ***Disassembly while under water pressure can result in flooding.***

⚠ **WARNING**: Warning is used to indicate a hazard which could cause injury or death if ignored. Example:

> ⚠ **WARNING! ELECTRICAL SHOCK HAZARD! UNPLUG THE UNIT BEFORE REMOVING THE COVER OR ACCESSING ANY INTERNAL CONTROL PARTS.**

SERIAL NUMBERS

The control valve serial number is located on the back of the timer case.

The media tank serial number is located on the top surface of the tank.

NOTICE: *Do not remove or destroy the serial number. It must be referenced on request for warranty repair or replacement.*

This publication is based on information available when approved for printing. Continuing design refinement could cause changes that may not be included in this publication.

* Verified utilizing hardness surrogate per ANSI/NSF Standard 44.

Specifications

Culligan® Mark 100 Water Conditioners with Time Clock, Aqua-Sensor® Device or Soft-Minder® Meter

	9” Model	12” Model
Control Valve	5-cycle, Reinforced Thermoplastic	5-cycle, Reinforced Thermoplastic
Overall Conditioner Height	51 in	51 in
	1 295 mm	1 295 mm
Media Tank Dimensions (Dia x Ht)	9 x 45 in	12 x 45 in
	229 x 1 143 mm	305 x 1 143 mm
Salt Storage Tank Dimensions (Dia x Ht)	16 x 43 in	18 x 43 in
	406 x 1 092 mm	457 x 1 092 mm
	18 x 43 in	
	457 x 1092 mm	
Exchange Media, Type and Quantity	Cullex® Media, 0.86 ft³	Cullex® Media, 1.4 ft³
	Cullex® Media, 24.5 L	Cullex® Media, 40 L
Underbedding, Type and Quantity	Cullsan® Underbedding, 12 lb	Cullsan® Underbedding, 30 lb
	Cullsan® Underbedding, 5.4 kg	Cullsan® Underbedding, 14 kg
Exchange Capacity	17,500 gr @ 4.0 lb	24,100 gr @ 6.0 lb
@ Salt Dosage Per Recharge[1]	1 133 g @ 1.8 kg	1 560 g @ 2.7 kg
	23,900 gr @ 8.0 lb	34,500 gr @ 12.0 lb
	1 547 g @ 3.6 kg	2 234 g @ 5.4 kg
	26,600 gr @ 12.0 lb	41,900 gr @ 18.0 lb
	1 722 g @ 5.4 kg	2 713 g @ 8.1 kg
Freeboard to Media[2]	16.6-17.6 in	17.5-18.5 in
	420-447 mm	444-470 mm
Freeboard to Underbedding[3]	39.2 in	38.5 in
	996 mm	978 mm
Salt Storage Capacity	250 lb or 375 lb	375 lb
	114 kg or 170 kg	170 kg
Rated Service Flow @ Pressure Drop	7.5 gpm @ 15 psi	7.5 gpm @ 15 psi
	30 Lpm @ 102 kPa	31 Lpm @ 102 kPa
Total Hardness, Maximum	75 gpg	99 gpg
	1 283 mg/L	1 692 mg/L
Total Iron, Maximum	5 ppm	5 ppm
	5 mg/L	5 mg/L
Hardness to Iron Ratio, Minimum	8 gpg to 1 ppm	8 gpg to 1 ppm
	140 mg/L to 1 mg/L	140 mg/L to 1 mg/L
Operating Pressure	20-125 psi	20-125 psi
	140-860 kPa	140-860 kPa
Operating Temperature	33-120°F	33-120°F
	1-50°C	1-50°C
Electrical Requirements	120V/60 Hz	120V/60 Hz
Electrical Power Consumption, Min/Max	3 Watts/35 Watts	3 Watts/35 Watts
Drain Flow, Maximum[4]	2.0 gpm	3.5 gpm
	8 Lpm	14 Lpm
Recharge Time, Average[5]	80 min	85 min
Recharge Water Consumption, Average	45 gal	86 gal
	170 L	325 L

1 Capacities and corresponding salt dosages pertain to low hardness waters. Capacities given are per recharge
2 Measured from top of media to top of inlet fitting (backwashed and drained).
3 Measured from top of underbedding to top of inlet fitting.
4 Backwash at 120 psi (830 kPa).
5 10 minute backwash, 7 lb (3.2 kg) 9” model or 13 lb (5.9 kg) 12” model salt dosage at 30 psi (204 kPa).

Preparation

COMPONENT DESCRIPTION

The water conditioner is shipped from the factory in a minimum of four cartons. Remove all components from their cartons and inspect them before starting installation.

Control Valve Assembly - Includes the 5-cycle regeneration control valve and the Accusoft® Microprocessor. Small parts packages will contain additional installation hardware. Installation and Operations Instructions and an Owner's Guide are included.

Media Tank - Includes Tripl-Hull™ media tank complete with Cullex® ion exchange resin, underbedding and outlet manifold.

Salt Storage Tank Assembly - Includes salt storage container with support plate and Dubl-Safe™ brine refill valve and chamber.

Bypass Valve - Includes the Cul-Flo-Valv®, interconnecting couplings, and the screws necessary for assembly.

TOOLS AND MATERIALS

The following tools and supplies will be needed, depending on installation method. **Observe all applicable codes.**

All Installations
- Safety glasses
- Phillips screwdrivers, small and medium tip.
- Gauge assembly (PN 00-3044-50 or equivalent)
- Silicone lubricant (PN 00-4715-07 or equivalent) - **DO NOT USE PETROLEUM-BASED LUBRICANTS**
- A bucket, preferably light-colored
- Towels

Special Tools
- Torch, solder and flux for sweat copper connections
- Threading tools, pipe wrenches and thread sealer for threaded connections.
- Saw, solvent and cement for plastic pipe connections.

Materials
- Brine line, 5/16" (PN 00-3031-28 or equivalent)
- Drain line, 1/2" (PN 00-3030-82, gray, semi-flexible; or PN 00-3319-46, black, semi-rigid; or equivalent)
- Thread sealing tape
- Pressure reducing valve (if pressure exceeds 125 psi [860 kPa], PN 00-4909-00 or equivalent)
- Pipe and fittings suited to the type of installation
- Water softener salt (rock, solar or pellet salt formulated specifically for water softeners)

APPLICATION

Water quality - Verify that raw water hardness and iron are within limits. Note the hardness for setting the salt dosage and recharge frequency.

Pressure - If pressure exceeds 125 psi (860 kPa), install a pressure reducing valve (see materials checklist). On private water systems, make sure the minimum pressure (the pressure at which the pump starts) is greater than 20 psi (140 kPa). Adjust the pressure switch if necessary.

> ⚠ **CAUTION:** ***The use of a pressure reducing valve may limit the flow of water in the household.***

Temperature - Do not install the unit where it might freeze, or next to a water heater or furnace or in direct sunlight.

LOCATION

Space requirements - Allow 6-12 inches (15-30 cm) behind the unit for plumbing and drain lines and 4 feet (1.3 meters) above for service access and filling the salt container.

Floor surface - Choose an area with solid, level floor free of bumps or irregularities. **Bumps, cracks, stones and other irregularities can cause the salt storage tank bottom to crack when filled with salt and water.**

Drain facilities - Choose a nearby drain that can handle the rated drain flow (floor drain, sink or stand pipe). Refer to the Drain Line Chart, Table 1 (page 10), for maximum drain line length.

NOTICE: Most codes require an anti-siphon device or airgap. Observe all local plumbing codes and drain restrictions. The system and installation must comply with all state and local laws and regulations.

Electrical facilities - A 10-foot cord and wall mount plug-in transformer are provided. The customer should provide a receptacle, preferably one not controlled by a switch that can be turned off accidentally. Observe local electrical codes.

Installation

PLACEMENT

Refer to Figure 1 for system placement.
- Set the media tank on a solid, level surface near water, drain and electrical facilities. Place the outlet (black coupling) of the tank on the left.
- Set the brine system on a flat, smooth, solid surface as near the media tank as possible.

MOUNT THE CONTROL VALVE

See Figure 2 for a visual on mounting the control valve to the tank.
- Remove and discard the protective covers on the tank couplings.
- Lubricate the o-rings on the tank couplings with silicone lubricant.
- Place the control on the tank couplings and press down firmly.

NOTICE: The white tank coupling is the inlet, and should be located on the inlet side (right side) of the control.
- Install the u-clamps on both sides of the control and secure with the screws.

TWELVE INCH SOFTENERS

As shipped from the factory, each control is equipped as a 9-inch unit. A 12-inch eductor nozzle and backwash flow control are included with each unit for conversion for use with the 12-inch tanks.
NOTICE: To prevent injury, convert unit to a twelve-inch configuration prior to installation.

Refer to Figure 3 for a visual on changing the eductor nozzle and the backwash flow control.
Eductor Nozzle Replacement:
- Remove the three screws on the eductor cap and remove the cap.
- Remove the eductor assembly.
- Remove the eductor screen from the assembly
- Remove the blue nozzle and replace it with the beige nozzle. Make sure to put the o-ring on the beige nozzle.
- Reverse the procedure to reassemble. To prevent leaks, ensure that the gasket is in the proper position.

Backwash Flow Control Replacement:
- Remove the drain clip and pull the drain elbow straight off.
- Remove the backwash flow control located behind the elbow. Put the #3 restrictor in its place.

NOTICE: The number on the flow control should face into the valve body.
- Reverse the procedure to reassemble.

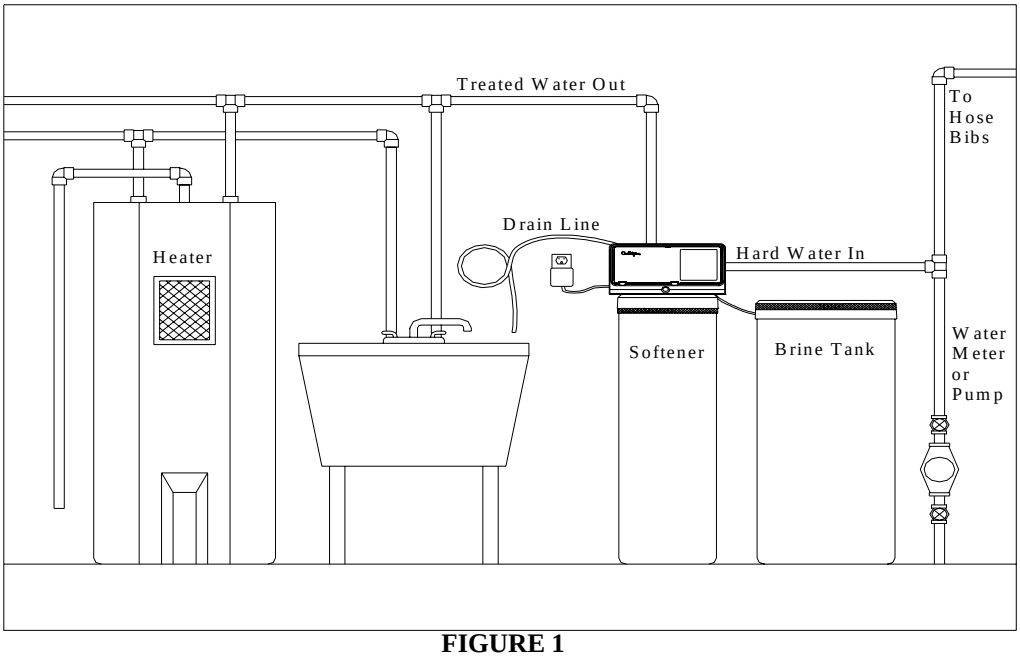


FIGURE 1

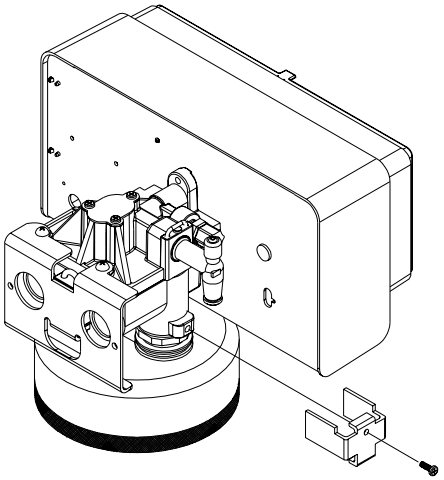


FIGURE 2

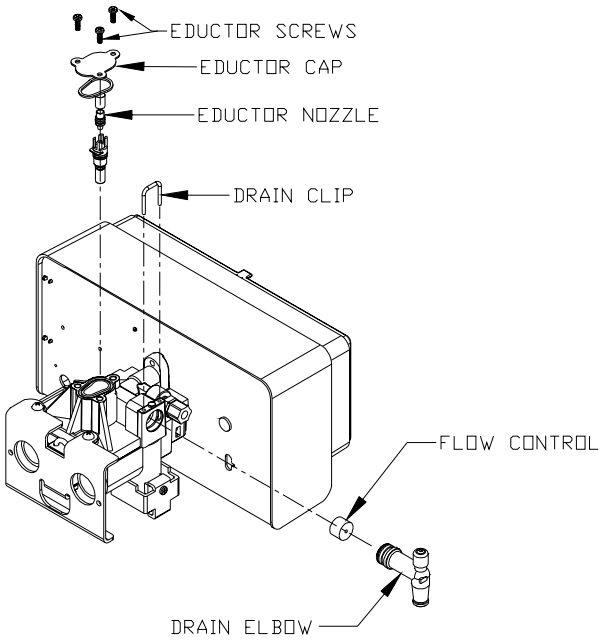


FIGURE 3

PLUMBING CONNECTIONS

Two methods of connecting the water softener to the plumbing system are available. Shipped with each softener is a Culligan® Cul-Flo-Valv® bypass valve, either PN 01-0124-88 or 01-0102-38. If local conditions warrant, you may use the sweat adaptor kits, PN 00-3314-44 or 00-3314-45.

NOTICE: *The Soft-Minder® meter cannot be used with the sweat adaptors.*

⚠ CAUTION: ***Close the inlet supply line and relieve system pressure before cutting into the plumbing! Flooding could result!***

⚠ CAUTION: ***When making sweat connections, remove all plastic and rubber components which contact brass or copper. Damage to these components may result otherwise.***

BYPASS VALVE INSTALLATION
AQUA-SENSOR® SENSING DEVICE AND TIME CLOCK UNITS ONLY

The bypass valve connects directly to the backplate of the valve with a pair of couplings and screws (Figure 4). To facilitate this connection, remove the plate by pulling up on the u-clip on the back of the valve. Lubricate all o-rings with silicone lubricant.

BYPASS VALVE INSTALLATION
SOFT-MINDER® METER ONLY

The Soft-Minder meter is placed between the bypass valve and the control in place of the couplings shipped with the Cul-Flo-Valv® (Figure 5). Make sure the meter is on the outlet port of the control and that it is installed with the arrow pointing in the direction of water flow. A pair of elongated bolts are packaged with the meter to hold the bypass valve to the back plate of the control. Lubricate all o-rings with silicone lubricant.

SWEAT ADAPTOR INSTALLATION

The sweat adaptors use a snap ring to hold them to the backplate of the control valve. The back plate will need to be removed from the valve for this connection. A pair of snap ring pliers, PN 00-5916-09, are needed for this connection.

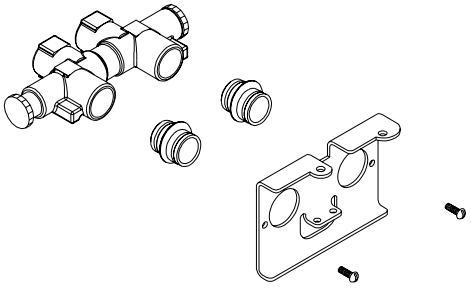


FIGURE 4

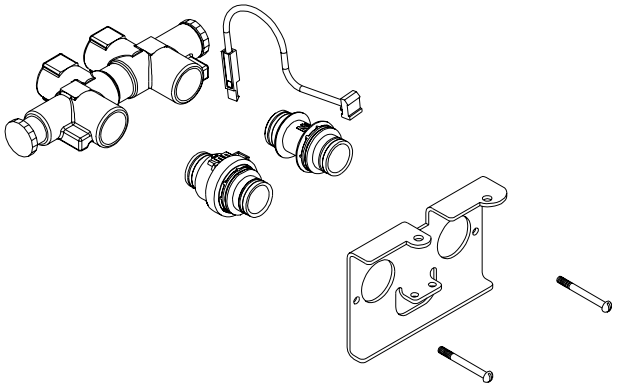


FIGURE 5

⚠ CAUTION: ***When reinstalling back plate to control valve, make sure the u-clip fully engages the two bottom holes of the bracket (Figure 6). Secure bracket from the top with the two mounting screws provided.***

CONNECT THE BRINE LINE

Refer to Figures 6 & 7.

• Use the length of brine line included in the brine tank, or measure a length of brine line sufficient to reach from the brine tank to the brine fitting, with no sharp bends. For easier access to the float it is recommended to add an extra four feet (1.3 meters) of length to the brine line. Cut both ends of the brine line squarely and cleanly.

• Remove the brine valve from the brine tank and then remove the white nut and insert from the float rod. Return float rod to its original position.

• Slip the white nut over one end of the tubing and press the plastic insert into the end of the tubing (Figure 7). Connect to the brine valve and tighten nut.

• Remove white nut from the brine connection, and remove the plastic insert from the brine connection fitting.

• Slip the white nut over one end of the tubing and press the plastic insert into the end of the tubing (Figure 7). Connect to the brine connection on the valve and tighten nut (Figure 6).

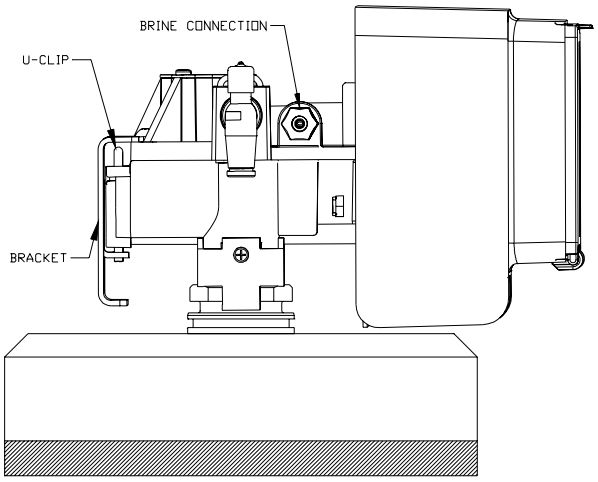


FIGURE 6

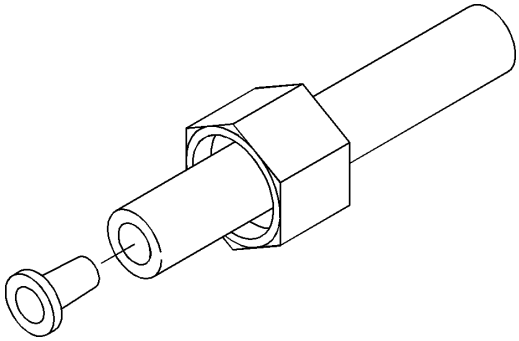


FIGURE 7

DRAIN LINE CONNECTION

Refer to Table 1, page 10 under the applicable tank size for drain line length and height limitations, and to Figure 3.

- Remove 1/2” pipe clamp from the small parts pack included with the control.
- Route a length of 1/2” drain line from the drain elbow to the drain.
- Fasten the drain line to the elbow with the clamp.
- Secure the drain line to prevent its movement during regeneration. When discharging into a sink, or open floor drain, a loop in the end of the tube will keep it filled with water and will reduce splashing at the beginning of each regeneration.

NOTICE: Waste connections or drain outlets shall be designed and constructed to provide for connection to the sanitary waste system through an air gap of 2 pipe diameters or 1 inch, whichever is larger.

NOTICE: Observe all plumbing codes. Most codes require an anti-siphon device or air gap at the discharge point. The system and installation must comply with state and local laws and regulations.

FILL THE SALT STORAGE CONTAINER

Fill the salt storage container with water until the level reaches about 1 inch above the salt support plate. Pour salt into the container. Fill with salt to within a few inches of the top.

AQUA-SENSOR® PROBE AND SOFT-MINDER® METER CONNECTION

To connect the probe or meter leads refer to Figure 8 and proceed as follows:

- Remove the timer case from the back plate by removing the two screws on the front of the cover.
- Rotate the circuit board holding plate to provide access to the back of the circuit board.
- Remove the plastic plug from the backplate.
- Slip the sensor probe lead or meter cable through the hole and toward the circuit board.

NOTICE: The strain relief located on the back of the wire connection for the Aqua-Sensor® probe may have to be removed in order to fit it through the backplate. Replace the strain relief if you need to remove it for assembly.

- Connect the lead to the circuit board. The Aqua-Sensor® probe terminal is labeled "AQUA" while the Soft-Minder® meter terminal is labeled "METER".
- Pull any excess cable wire back out of the enclosure, and route the wiring inside the enclosure to avoid any interference with moving parts.
- Locate the strain relief bushing in the parts pack. Place it on the cable at the point of entry to the rear of the timer plate and push it into the hole.

NOTICE: The wire connectors must be connected to the circuit board properly. The wires must exit the plug-in connector opposite of the raised white base of the circuit board connector. Failure to properly connect any of the connectors will result in a malfunction of the circuit board operation.

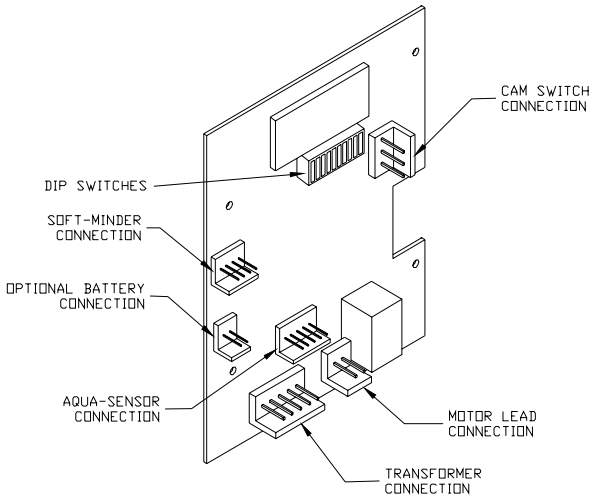


FIGURE 8

ELECTRICAL CONNECTION

The power cord needs to be connected to the plug-in transformer. Figure 9 shows the cord attachment to the transformer.

NOTICE: Observe all state and local electrical codes.

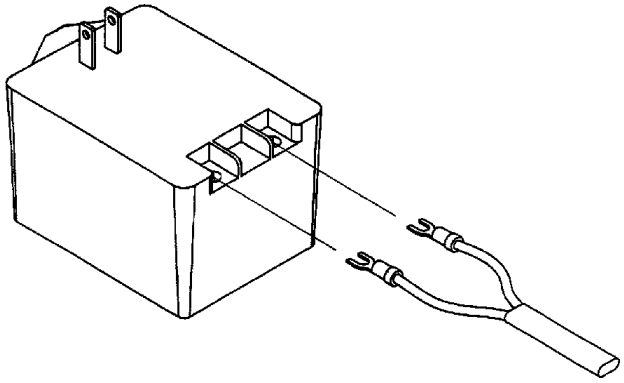


FIGURE 9

FRONT COVER ATTACHMENT

The front door comes in protective wrap to prevent damage during shipment. The wrap also keeps the door free of fingerprints and other marks. The door should be assembled to the control as a final step, when you are finished with the installation. There are two small clips in the small parts pack which are used to secure the door to the valve cover. Figure 10 shows how the clips snap into the cover to hold the door.

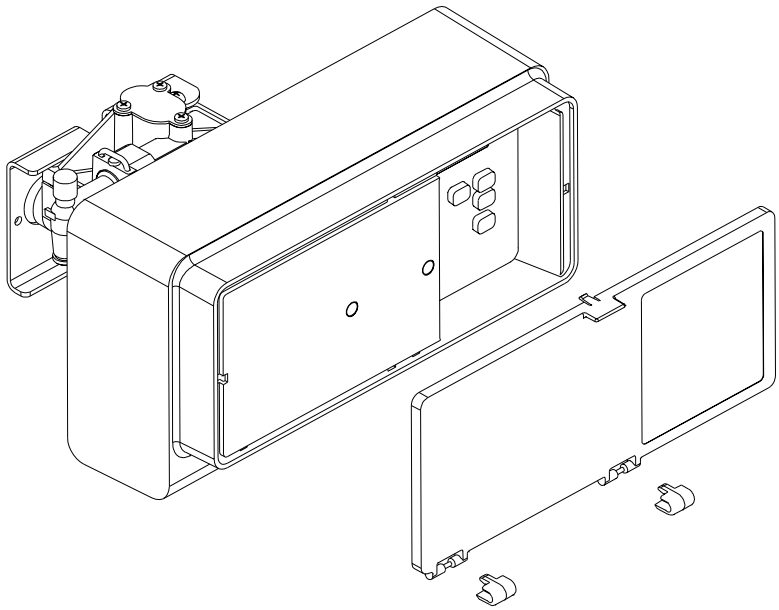


FIGURE 10

TABLE 1 - DRIAN LINE LENGTH AND HEIGHT LIMITATIONS

9-INCH MODELS

Average Water Pressure	Height of Drain Discharge Above Floor Upon Which Softener Sets										
psi	4 in	1 ft	2 ft	3 ft	4 ft	5 ft	6 ft	7 ft	8 ft	9 ft	10 ft
kPa	0.1 m	0.3 m	0.6 m	0.9 m	1.2 m	1.5 m	1.8 m	2.1 m	2.4 m	2.7 m	3.1 m
30	56	50	40	30	20	10					
210	17.1	15.3	12.2	9.2	6.1	3.1					
50	112	106	96	86	76	66	56	46	36	26	16
350	34.2	32.3	29.3	26.2	23.2	20.1	17.1	14.0	11.0	7.9	4.9
70	143	137	127	117	107	97	87	77	67	57	47
480	43.6	41.8	38.7	35.7	32.6	29.6	26.5	23.5	20.4	17.4	14.3
90	153	147	137	127	117	107	97	87	77	67	57
620	46.7	44.8	41.8	38.7	35.7	32.6	29.6	26.5	23.5	20.4	17.4
120	159	153	143	133	123	113	103	93	83	73	63
830	48.5	46.7	43.6	40.6	37.5	34.5	31.4	38.4	25.3	22.3	19.2

12-INCH MODELS

Average Water Pressure	Height of Drain Discharge Above Floor Upon Which Softener Sets										
psi	4 in	1 ft	2 ft	3 ft	4 ft	5 ft	6 ft	7 ft	8 ft	9 ft	10 ft
kPa	0.1 m	0.3 m	0.6 m	0.9 m	1.2 m	1.5 m	1.8 m	2.1 m	2.4 m	2.7 m	3.1 m
30	44	38	28	18							
210	13.4	11.6	8.5	5.5							
50	103	97	87	77	67	57	47	37	27	17	7
350	31.4	29.6	26.5	23.5	20.4	17.4	14.3	11.3	8.2	5.2	2.1
70	129	123	113	103	93	83	73	63	53	43	33
480	39.3	37.5	34.5	31.4	28.4	25.3	22.3	19.2	16.2	13.1	10.1
90	145	139	129	119	109	99	89	79	69	59	49
620	44.2	42.4	39.3	36.3	33.2	30.2	27.1	24.1	21.0	18.0	14.9
120	153	147	137	127	117	107	97	87	77	67	57
830	46.7	44.8	41.8	38.7	35.7	32.6	29.6	26.5	23.5	20.4	17.4

Settings

The mircoprocessor can be set in three distinct operation modes. Aqua-Sensor® Sensing Device, Soft-Minder® meter, or Timeclock. As shipped from the factory, the control is set for 9" Timeclock operation. A set of dip switches, located on the back of the control, may have to be changed for proper operation of the unit. Refer to Figure 12 and Table 3 for the proper setting of these dip switches.

AQUA-SENSOR® OPERATION

The Aqua-Sensor® Sensing Device utilizes a pair of cells to sense the passage of hardness through the water softener. It can automatically adjust for water with variable hardness levels. As a result, it is the most efficient means of operating a water softener. When hardness is sensed, the unit signals for a regeneration. The "REGEN" enunciator will light at this point. The unit will perform a standard regeneration cycle at the preset time, unless the number 6 dip switch is turned on. When the number 6 dip switch is in the 'ON' position, a regeneration will begin immediately.

The Aqua-Sensor® models contain a feature which can automatically detect when the brine solution has been rinsed through the Cullex® media. This feature will advance the control to the next position when it senses that the brine has been rinsed out prior to the time set in the Brine/Rinse option.

Since the Aqua-Sensor® device automatically senses hardness in the water, the programming is limited to the Time-of-Day, Time-of-Regeneration, Salt Dosage, Backwash Time and Brine/Rinse settings. The numeric enunciator will only light for those programming options (numbers 1-6, 9, and 10). Refer to the programming section for further information on programming the microprocessor.

SOFT-MINDER® OPERATION

The Soft-Minder® meter utilizes a turbine impeller to accurately monitor the customers water usage. After a predetermined amount of water has passed through the system, the microprocessor will signal a regeneration. The "REGEN" enunciator will light at this point. The unit will perform a standard regeneration cycle at the preset time, unless the number 6 dip switch is turned on. When the number 6 dip switch is in the 'ON' position, a regeneration will begin immediately.

The microprocessor automatically calculates the gallons of water which can be treated based on the salt dosage, the water hardness, and the tank size. Refer to Tables 4B and 5B for capacity and reserve values that the microprocessor will use based on its settings. The GALLONS TO SIGNAL setting can be manually set to directly override the microprocessor calculations. This setting can be modified when positioned at numeric enunciator 8. The gallon value may need to be raised or lowered to meet the needs of your specific application. The control must be cycled through a complete regeneration before the gallon override setting is stored by the microprocessor.

NOTICE: Changing the capacity will affect the reserve capacity. An INCREASE in the gallons capacity will DECREASE the reserve capacity. A DECREASE in the gallons capacity will INCREASE the reserve capacity. Refer to Tables 4B and 5B to determine the units total capacity based on salt dosage and the hardness level.

The programming of the Soft-Minder® provides several settable variables, the Time-of-Day, Time-of-Regeneration, Salt Dosage, Backwash Time, Brine/Rinse Time, Hardness, and Gallons to Signal. The numeric enunciator will light for programming sequences 1-10. Refer to the programming section for further information on programming the microprocessor.

TIME CLOCK OPERATION

When the mircoprocessor is set-up as a time clock unit, the Culligan® Mark 100 control will regenerate at fixed intervals which are determined by the water hardness, the salt dosage, and the household's water usage. To calculate the regeneration interval, locate the total gallon capacity in Table 4B or 5B based on the salt dosage and the water hardness. Divide the units total capacity by the anticipated daily gallon usage for the household. This value is the regeneration interval, always round this value up to the nearest whole number. This regeneration interval can be set anywhere from 1 to 42 days.

The progamming for the time clock models is limited to Time-of-Day, Time-of-Regeneration, Salt dosage, Backwash Time, Brine/Rinse Time, and the Regeneration Interval. The numeric enunciator will only light for those programming options (numbers 1-6, and 8-10). Refer to the programming section for further information on programming the microprocessor.

CAPACITY AND SALT SETTINGS

The microprocessor calculates the total gallon capacity based on the salt dosage, water hardness and tank size. Table 2 will help in anticipating the total gallons of usage based on the total number of people in the household.

For future reference, record the salt dosage, hardness level, and regeneration interval (time clock models only) below:

- Salt Dosage _____
- Hardness Level _____
- Regeneration Interval (Days)_____
  TIME CLOCK MODELS ONLY

TABLE 2 - DAILY WATER USAGE

Persons in Household	Gallons per Day
2	150
3	225
4	300
5	375
6	450
7	525
8	600
9	675
10	750

BRINE VALVE "A" DIMENSION

The Culligan® unit contains a brine float which can serve as a backup refill shutoff in the event of a failure, such as a power outage when in the refill position. The float level should be set based on the salt dosage setting. Refer to Figure 11.

- Lift the brine valve from the brine chamber.
- Find the correct “A” dimension from Tables 4 & 5.
- Set the distance from the top of the filter screen to the base of the float accordingly. The slight difference in height when the float is pulled up or down is negligible.

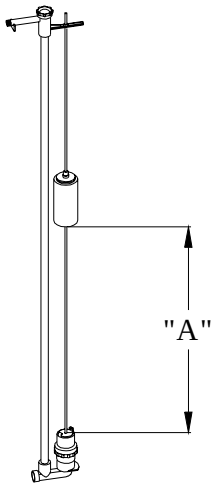


FIGURE 11

DIP SWITCH SETTINGS

The microprocessor has several dip switches that can be switched for various additional functions. Listed are the functions for the dip switches used on the Mark 100 control.

Dip Switch	Function	Default (OFF) Position
4	9"-12" Tank Settings	9" Tank
6	Delay vs. Immediate Regeneration	Delayed Regeneration
7	English vs. Metric Settings	English Settings
8	12 or 24 Hour Clock	12 Hour Clock
10	Time Clock Backup	No Forced Regeneration

Refer to Figure 12 for setting the dipswitches. As shipped from the factory all dip switches are in the **off** position.

NOTICE: The end of a ball point pen works well to flip the dip switches as little force is required to flip the switches. DO NOT use a pencil as the graphite may damage the dip switch.

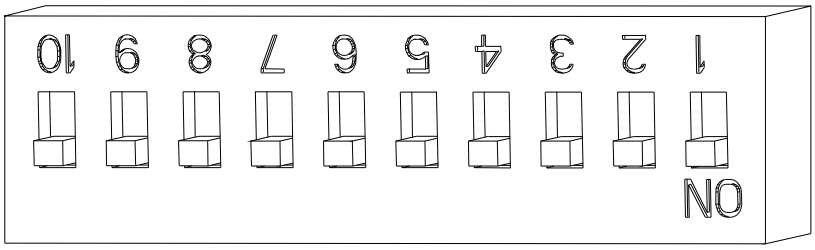


FIGURE 12

TABLE 3 - DIP SWITCH SETTING

			DIP SWITCHES									
			1	2	3	4	5	6	7	8	9	10
CONTROL TYPE	ENGLISH SETTINGS	9"	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
		12"	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF
	METRIC SETTINGS	9"	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	OFF	OFF
		12"	OFF	OFF	OFF	ON	OFF	OFF	ON	ON	OFF	OFF

Make sure the inlet water supply is turned off, then supply power to the timer. The display will power up flashing "12:00 PM". After 1 minute the motor will energize and cycle the control, without stopping, to the home position. This is required to ensure that the control is in the home position.

FIGURE 13 - Circuit Board Display

The timer uses four buttons:

1. STATUS: Advance timer through display options.
2. UP ARROW: Increase the setting.
3. DOWN ARROW: Decrease the setting.
4. REGEN.: Initiate a manual regeneration.

SETTING THE MICROPROCESSOR

The microprocessor senses when it is installed as a Soft-Minder or Aqua-Sensor® control. Adding or removing any connection to the board while power is on, or flipping any of the dip switches will automatically reset the microprocessor to the factory settings.

1. With a flashing or blank display, pressing the status button twice will move to the **Time-of-Day** adjustment. Adjust the time by using the up and down arrows. A number "1" will appear at the bottom of the display while in this mode.

Press ▲ to increase or
▼ to decrease

2. Press status again, this displays the **Time-of-Regeneration** for delayed units, adjust using the up and down arrows. A number "2" will appear at the bottom of the display while in this mode.

Press ▲ to increase or
▼ to decrease

3. Press status again, the number "3" will appear at the bottom of the display. **This setting is not used**, and any changes made will not affect the operation of the microprocessor.

Press ▲ to increase or
▼ to decrease

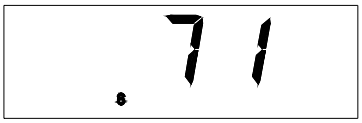
4. Pressing status again will show the **Salt Dosage**. This can be adjusted with the up and down arrows, the range is 3-15 lbs. for the 9" controls and 5-24 lbs. on 12" controls. A number "4" will appear at the bottom of the display while in this mode.

Press ▲ to increase or
▼ to decrease

5. Press status again, this displays the **Backwash Time** in minutes. The setting can be adjusted between 5 and 40 minutes by using the up and down arrows. A number “5” will appear at the bottom of the display while in this mode.

Press ▲ to increase or
▼ to decrease

6. Press status again to display the **Brine/Rinse Time** in minutes. The settings can be adjusted using the up and down arrows (37-85 min for 9”, 35-89 min for 12”). A number “6” will appear at the bottom of the display while in this mode.



Press ▲ to increase or
▼ to decrease

7. Press status again to display the **Hardness Level** in grains per gallon. The setting can be adjusted from 2-99 gpg by using the up and down arrows. This screen will not appear when the Aqua-Sensor® probe is attached. A number “7” will appear at the bottom of the display while in this mode.

Press ▲ to increase or
▼ to decrease

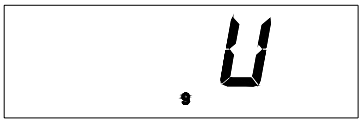
8. Press status again, for time clock models the display will show the **Regeneration Interval**. The setting can be adjusted using the up and down arrows. Controls with a Soft-Minder® meter will display the **Gallons to Signal** (multiply the displayed value by 10). A number “8” will appear at the bottom of the display while in this mode.

Press ▲ to increase or
▼ to decrease

8A. Display menu '8A' will light when dip switch #10 is in the ON position. This is the **Time Clock Backup** feature. The control will force a regeneration, within a range of 1-42 days, when in Aqua-Sensor® or Soft-Minder® meter mode.

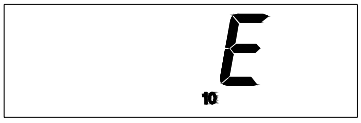
Press ▲ to increase or
▼ to decrease

9. Pressing status again will display the **Lock/Unlock** feature. A “U” in the display signifies an unlocked microprocessor, while a “L” will lock the settings except for the time of day. To toggle between the two settings press both arrow keys simultaneously. A number “9” will appear at the bottom of the display while in this mode.



Press ▲ simultaneously
▼

10. Pressing status again brings up the ability to **Enable/ Disable** the screen blanking. To have the display constantly lit, press the up arrow, a “d” for disable will appear in the display. Pressing the up arrow again displays an “E”, signifying that display blanking is enabled. A number “10” will appear at the bottom of the display while in this mode.



Press ▲ to change

NOTICE: Programming changes are not locked into the microprocessor memory until the control completes a regeneration cycle. To initiate a manual regeneration, press the REGEN. button twice, the "REGEN" enunciator will flash on the display. Refer to the Manual Cycling section on how to step through the regeneration stages.

TABLE 4A - CAPACITY, 9” AQUA-SENSOR® SENSING DEVICE (GALLONS)

SALT DOSAGE	“A” DIMENSION				HARDNESS													
	160 LB INCH(CM)	250 LB INCH(CM)	375 LB INCH(CM)		1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	66-70	71-75
8	14-3/4	9-1/4	7-1/2	TOTAL CAPACITY	4,900	2,450	1,633	1,225	980	817	700	613	544	490	445				
	(37.5)	(23.5)	(19.1)	CAPACITY TO SIGNAL	3,537	1,949	1,179	1,004	707	590	505	442	393	354	322				
12	21-3/4	15-3/4	11-3/8	TOTAL CAPACITY	5,420	2,710	1,807	1,355	1,084	903	774	678	602	542	493	452	417	387	301
	(55.2)	(40.0)	(26.9)	CAPACITY TO SIGNAL	3,656	1,828	1,219	914	731	609	522	457	406	366	332	305	281	261	244

TABLE 4B - CAPACITY, 9” SOFT-MINDER® METER (GALLONS)

SALT DOSAGE	“A” DIMENSION				HARDNESS													
	160 LB INCH(CM)	250 LB INCH(CM)	375 LB INCH(CM)		1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	66-70	71-75
4	7-3/4	4-5/8	3-1/4	TOTAL CAPACITY	3,220	1,610	1,073	805	644	537									
	(19.7)	(11.7)	(8.9)	CAPACITY TO SIGNAL	2,596	1,298	849	637	495	412									
8	14-3/4	9-1/4	7-1/2	TOTAL CAPACITY	4,900	2,450	1,633	1,225	980	817	700	613	544	490	445				
	(37.5)	(23.5)	(19.1)	CAPACITY TO SIGNAL	3,314	1,657	1,084	813	631	526	442	387	333	300	267				
12	21-3/4	15-3/4	11-3/8	TOTAL CAPACITY	5,420	2,710	1,807	1,355	1,084	903	774	678	602	542	493	452	417	387	361
	(55.2)	(40.0)	(26.9)	CAPACITY TO SIGNAL	3,656	1,828	1,195	896	696	580	987	426	367	331	294	270	246	229	209

TABLE 5A - CAPACITY, 12” TIME CLOCK AND AQUA-SENSOR® SENSING DEVICE (GALLONS)

SALT DOSAGE	“A” DIMENSION				HARDNESS													
	160 LB INCH(CM)	250 LB INCH(CM)	375 LB INCH(CM)		1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-60	61-70	71-80	81-90	91-99
12	21-3/4	15-3/4	11-3/8	TOTAL CAPACITY	6,740	3,370	2,247	1,685	1,348	1,123	963	843	749	674	562				
	(56.2)	(40.0)	(28.9)	CAPACITY TO SIGNAL	4,542	2,271	1,514	1,136	908	757	649	568	505	454	379				
18	N/A	24-1/2	17-1/4	TOTAL CAPACITY	7,660	3,830	2,553	1,915	1,532	1,277	1,094	958	851	766	638	547	479	426	383
		(62.2)	(43.8)	CAPACITY TO SIGNAL	5,200	2,600	1,733	1,300	1,040	867	743	650	578	520	433	371	325	289	260

TABLE 5B - CAPACITY, 12” SOFT-MINDER® METER (GALLONS)

SALT DOSAGE	“A” DIMENSION				HARDNESS													
	160 LB INCH(CM)	250 LB INCH(CM)	375 LB INCH(CM)		1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-60	61-70	71-80	81-90	91-99
6	14-3/4	7-3/8	5-1/2	TOTAL CAPACITY	4,520	2,260	1,507	1,130	904	753	646	565							
	(37.5)	(18.7)	(14.0)	CAPACITY TO SIGNAL	3,495	1,748	1,143	857	666	555	466	408							
12	21-3/4	15-3/4	11-3/8	TOTAL CAPACITY	6,740	3,370	2,247	1,685	1,348	1,123	963	843	749	674	562				
	(56.2)	(40.0)	(28.9)	CAPACITY TO SIGNAL	4,832	2,416	1,580	1,185	920	767	644	564	486	437	357				
18	N/A	24-1/2	17-1/4	TOTAL CAPACITY	7,660	3,830	2,553	1,915	1,532	1,277	1,094	958	851	766	638	547	479	426	383
		(62.2)	(43.8)	CAPACITY TO SIGNAL	5,346	2,673	1,748	1,311	1,018	849	713	624	537	484	395	335	286	246	219

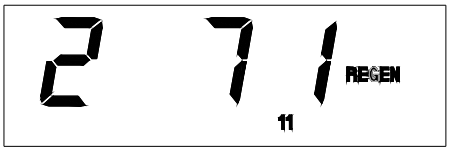
Manual Cycling

The Culligan® microprocessor can be indexed through the various regeneration stages. For all steps, the cycle numbers do not appear, or change, until the motor stops.

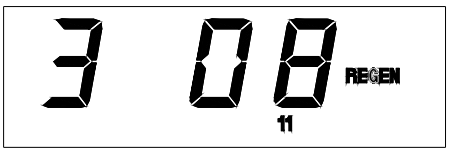
1. Press the status button to move past steps 1-10 until the display is blank. Push the up arrow. The number “11” icon will light up. An "H" will appear in the display. The control is in the HOME position. Pressing the regen button once will light the 'REGEN' icon.

2. Press the regen button one more time. The 'REGEN' icon will blink, and the motor will advance the control. A '1' will appear. The unit is now in the BACKWASH position. The numbers to the right indicate the time remaining for the cycle.

3. Press the up arrow. A '2' will appear in the display, along with the cycle time remaining. The control is in the BRINE DRAW/SLOW RINSE cycle.

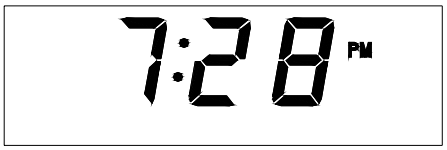


4. Press the up arrow. A '3' will appear in the display, along with the cycle time remaining. The control is now in the FAST RINSE/BRINE REFILL cycle.



5. Press the up arrow. An 'H' will appear in the display. The unit is in the HOME position. The 'REGEN' enunciator is no longer blinking.

6. Press the status key. Time-of-Day appears in the display.



Service Check

The service check mode allows one to view the instantaneous flow rate, the days since the last regeneration, the total number of regenerations, the regenerations in the past fourteen days, and the gallons remaining.

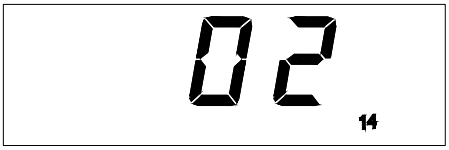
To enter the service check mode, follow these steps:

1. Press the status key to move past steps 1-10 until the display is blank.
2. Push the down arrow. The number '12' will appear only when the Soft-Minder® meter is connected. The display reads the gallons per minute flow rate. This screen will update with the current meter reading every 6 seconds.

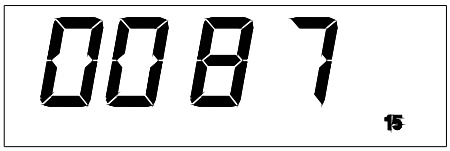
3. Press the down arrow. The number '13' and an "A" will light at the bottom of the display. The display will indicate the number of regenerations that have occurred in the last 14 days.

4. Press the down arrow. The number '13' and a 'B' will light at the bottom of the display. The display will indicate the total number of regenerations this control has cycled through.

5. Press the down arrow. The number '14' will light at the bottom of the display. The number in the display indicates the number of days since last regeneration.



6. Press the down arrow. The number '15' will be displayed if the flow meter or Aqua-Sensor® is connected. For the controls with the Soft-Minder® meter, the display indicates the gallons remaining before the unit signals for regeneration (multiply the displayed number by 10). For Aqua-Sensor® controls, the number indicates the total minutes of the last brine rinse cycle.



NOTICE: Pushing the up arrow at any of these displays will immediately bring you to the control position display, the number '11' will light at the bottom of the display.

DISPLAY

There are two display modes on the Culligan® microprocessor. As shipped from the factory, the display of the board is initially set to turn off if there has been no keyboard activity after a 1 minute period. Touching any key will relight the display. The display can be set so that it will always display the time. For information on changing the display lighting option, refer to the programming section.

REGENERATION

There are several conditions that will cause the control to trip a regeneration. The 'REGEN' enunciator will light when the control has signaled for a regeneration. The 'REGEN' enunciator will flash while the control is in regeneration. The following are conditions that will call for regeneration:

1. When the Aqua-Sensor® probe senses the hardness in the Cullex® media.
2. When the Soft-Minder® meter has recorded the passage of a predetermined number of gallons.
3. When the time clock has counted past the set number of days.
4. At the preset time, when the number of days without a regeneration is equal to the days set in menu #8A.
5. At the preset time, when the 'REGEN.' button is depressed once. 'REGEN.' will light.
6. Immediately, when the 'REGEN." button is depressed twice. 'REGEN.' will light and blink.
7. Immediately, if power to the unit has been off for more than 3 hours.

If dip switch 6 is in the ON position, the unit will begin a regeneration immediately for instances 1 and 2. With dip swith 6 in the OFF position, the regeneration will not begin until the preset regeneration time.

START-UP

NOTICE: A sanitizing agent is added to the softener at the factory. Flush the tank to drain with a minimum of 40 gallons of water, or initiate a full regeneration cycle, prior to putting the unit into service.

- Close the main water supply valve.
- Set the Cul-Flo-Valv® to the bypass position.
- Ensure that all faucets at the installation site are closed.
- Direct the drain line discharge into a bucket where flow can be observed.
- Plug the transformer into a 120 Volt, 60 Hz, single-phase receptacle.
- Wait 1 minute for the control to energize the motor and home itself.
- Set the timer to the correct time of day.
- Open the main supply valve.
- Initiate an immediate regeneration to move the control into the backwash position.
- Refer to the section on manual cycling for information on cycling the control through its positions.
- When in the backwash position, **slowly** shift the bypass to the soft water position until water flows.
- Allow the tank to fill slowly until water flows from the drain line.
- When flow to drain is established, open the bypass fully. Watch the drain line discharge for signs of resin. If signs of resin particles appear, reduce the flow. Increase the flow again when resin no longer appears in the discharge.
- When the unit is filled with water, return the timer to the service position and proceed with setting the microprocessor. Refer to the programming section.

NOTICE: Unplugging the Culligan® Mark 100 water softener will not affect any of the timer settings. Once programmed in, the settings will be stored indefinitely. In the event of a power failure the time-of-day setting will be stored for 1-2 days. If longer time storage is necessary, a battery backup is available. Refer to the Service Manual for additional information.

BEFORE LEAVING THE INSTALLATION SITE

Flush the sanitizing solution from the unit by running it to drain for a minimum of 40 gallons, or initiate a full recharge cycle (by pushing the 'REGEN.' button twice).

Ensure that the brine tank has water to the level of the float. Add water to the tank with a hose or put the unit into a full recharge so that the brine refill cycle will fill the tank with the proper amount of water.

The water heater will hold hard water for several days. Advise the customer that the existing water volume in the tank will need to be used before the hot water is soft. If soft hot water is required immediately, refer to the water heater owner's manual for the proper method of draining the water heater.

Explain the operation of the softener to the customer. Make sure the customer knows that there will be new sounds associated with the recharging of the unit. Advise the customer to periodically check and replenish the salt supply.

Check the approiate softener model box on page 2 of the Owner's Guide. Fill in the hardness and number of people, and then sign and date the corresponding performance data sheet. Leave the Owner's Guide with the customer.

Clean up the unit and installation site, removing any soldering, or pipe threading, residues from the equipment and surrounding area with a damp towel.

Sanitizing Instructions

A water softener in daily use on a potable water supply generally requires no special attention other than keeping the salt tank filled. Occasionally, however, a unit may require sanitation under one of the following conditions:

- The unit has stood idle for a week or more (the premises vacant or the residents on vacation).
- On private supplies, the appearance of off-tastes and odors, particularly a musty or "rotten egg" odor .

For occasional occurrences, the softener can be sanitized with household bleach as follows.

NOTICE: *If the water supply contains iron, regenerate the softener before sanitizing to remove accumulated iron from the Cullex® resin.*

WARNING: HAZARD FROM TOXIC FUMES! CHLORINE BLEACH AND COMMON IRON CONTROL CHEMICALS MAY GENERATE TOXIC FUMES WHEN MIXED.

- **IF THE UNIT USES CULLIGAN® SOFNER-GARD™ CHEMICAL OR OTHER COMPOUNDS CONTAINING SODIUM HYDROSULFITE OR SODIUM BISULFITE, OR ANY OTHER REDUCING AGENT, DISCONNECT THE DEVICE AND MANUALLY REGENERATE THE UNIT BEFORE SANITIZING.**

- **DO NOT USE THIS PROCEDURE IF THE SOFTENER SALT CONTAINS IRON CONTROL ADDITIVES.**

1. Remove the brine tank cover and the small cover on the brine valve chamber.

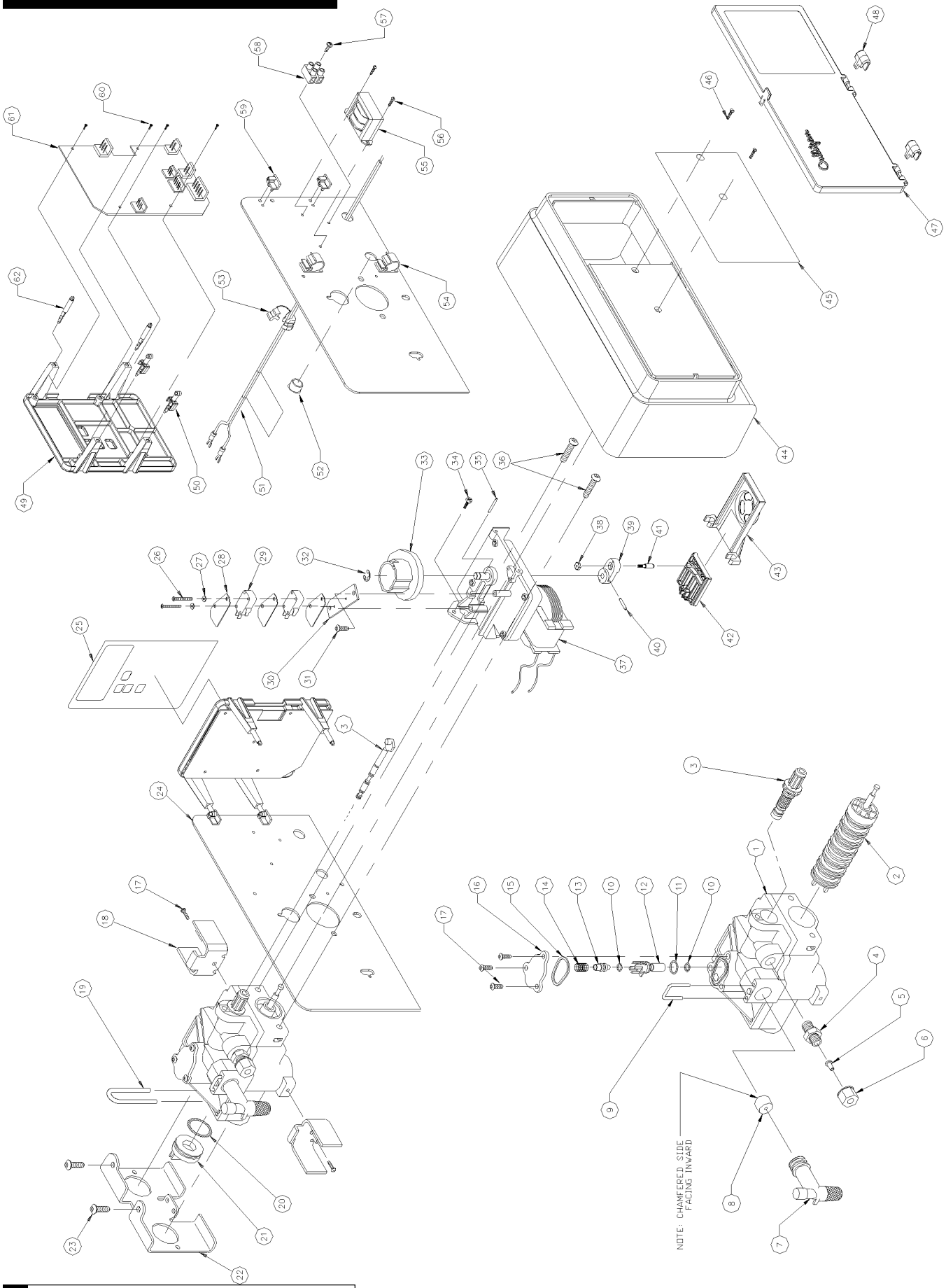
2. Pour directly into the brine chamber 1 cup (9-inch units) or 2 cups (12-inch units) of common household bleach (5-1/4% sodium hypochlorite).

NOTICE: *Do not use lemon scented bleaches, or similar bleaches that contain perfumes.*

3. Manually start a recharge cycle. Allow the unit to complete the recharge cycle automatically.

If tastes and odors return frequently, even after sanitization, additional equipment my be required. Have a laboratory analysis performed to determine the possible cause of the odor. Contact Household Application Engineering for assistance. Also, have the consumer send a sample to a qualified laboratory for bacterial analysis.

Parts List - Control

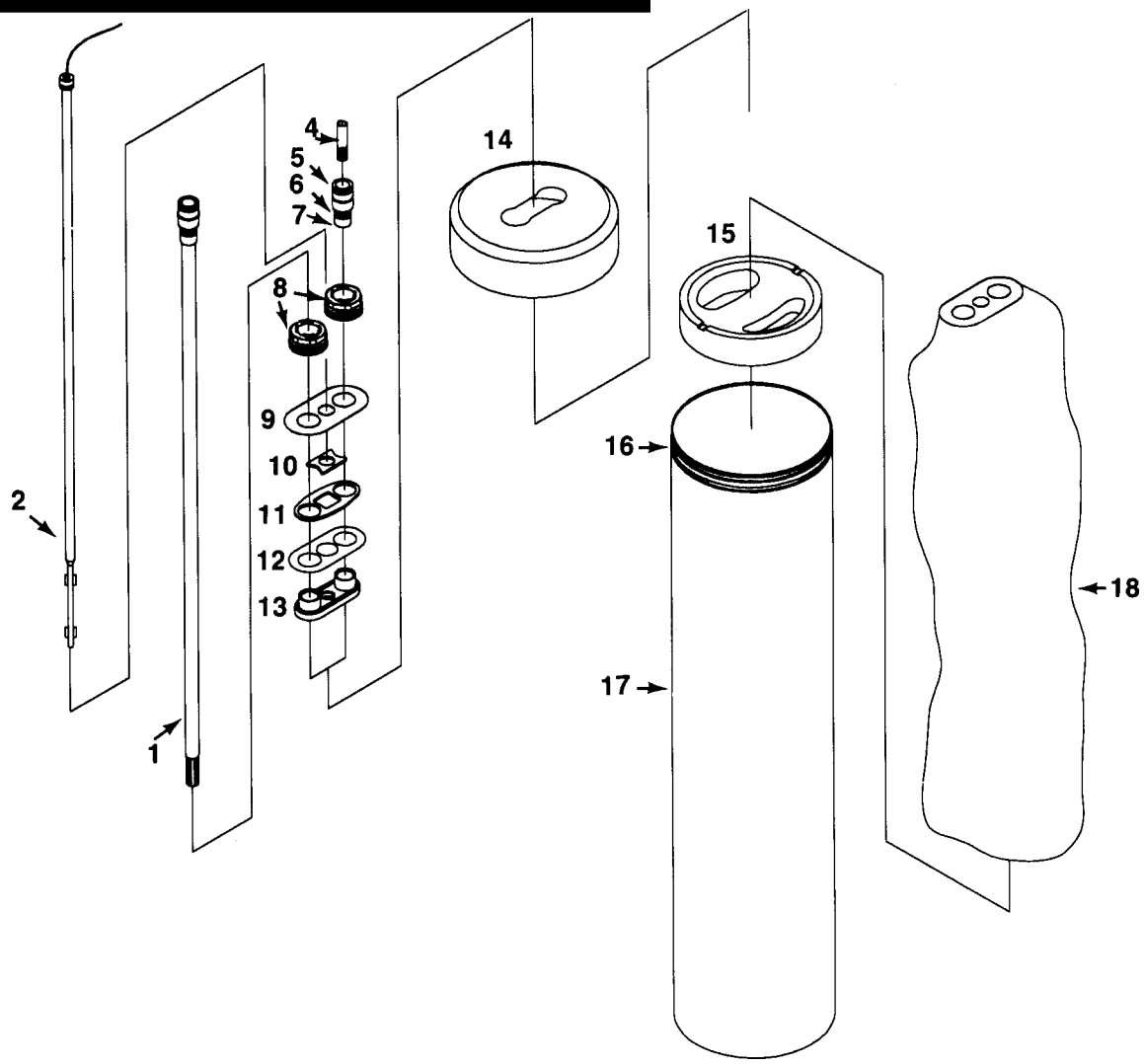


Item	Part No.	Description
—	01-0112-89	Control Valve Assembly - Mark 100
1	00-4498-65	Control Valve
‡ 2	01-0130-83	Seal Pack Assembly
‡ 3	01-0136-06	Eductor Sleeve and Eductor Piston Assembly
‡ *	P0-4479-86	O-Ring, Eductor Sleeve, Small O-Ring (25/Kit)
‡ *	P0-3084-07	O-Ring, Eductor Sleeve, Large O-Ring (25/Kit)
‡ *	P0-4487-50	Screen, Eductor Sleeve (10/Kit)
‡ *	00-4479-87	O-Ring, Eductor Piston (10/Kit)
4	00-4432-91	Connector Brine Line
5	P0-3031-92	Insert, PP, 0.312" (25/Kit)
6	P0-3031-93	Nut, PP, 0.312" (25/Kit)
7	00-4468-35	Drain Elbow Assembly w/O-Ring
8	P0-3316-35	Backwash Restrictor, #2, 9" Tanks (10/Kit)
	P0-3316-36	Backwash Restrictor, #3, 12" Tanks (10/Kit)
9	00-4473-87	Retainer, Drain Elbow
‡ 10	P0-3084-38	O-Ring, Eductor Nozzle and Throat (10/Kit)
‡ 11	00-3084-37	O-Ring, Eductor Throat
‡ 12	00-4012-48	Eductor Throat w/O-Rings
‡ 13	00-4460-38	Eductor Nozzle - Blue, 9" Tanks
	00-4460-39	Eductor Nozzle - Beige, 12" Tanks
14	P0-4452-69	Eductor Screen (10/Kit)
‡ 15	00-4457-97	Gasket
16	00-4010-22	Eductor Port Cover
17	00-4486-87	Screw
18	01-0051-30	Bracket
19	00-4481-28	Retainer, Rear Body Plug
‡ 20	P0-4449-14	O-Ring, Rear Seal (10/Kit)
21	00-4481-26	Rear Body Plug
22	01-0046-89	Cul-Flo Bracket
23	P0-3183-83	Screw (10/Kit)
24	01-0128-12	Control Back Plate
25	01-0128-68	Timer Label
26	00-4486-86	Screw
27	00-2183-43	Washer
28	00-4452-72	Barrier
‡ 29	01-0032-44	Switch

Item	Part No.	Description
30	00-4010-40	Switch Bracket
31	00-3184-55	Screw
32	P1-0130-43	Retaining E-Ring (10/Kit)
33	01-0130-31	Cam
34	01-0017-84	Screw
35	00-4435-59	Roll Pin
36	00-3184-52	Screw
37	01-0136-04	Drive Motor & Bracket Assembly 24V/60Hz
38	00-3183-54	Nut
39	00-4452-21	Bellcrank
40	00-4452-46	Roll Pin
41	01-0126-49	Follower
42	01-0126-48	Yoke
43	01-0126-47	Bracket
44	01-0128-09	Cover
45	01-0128-67	Setting Label
46	00-4022-01	Screw
47	01-0128-08	Door
48	01-0128-10	Door Retaining Clip
49	01-0065-05	Circuit Board Mounting Plate
50	01-0127-76	Standoff
51	A0-4880-16	Power Cord
52	01-0064-98	Plug, Snap-In
53	01-0003-72	Strain Relief
54	00-4015-67	Wire Clip
55	01-0128-45	Transformer
56	00-3184-55	Screw
57	01-0111-96	Screw
58	00-3318-48	Terminal Strip
59	01-0128-05	Hinge, Circuit Board Plate
60	00-4414-10	Screw
61	01-0128-34	Circuit Board
62	01-0127-76	Standoff Hinge
*	01-0129-56	Wall Mount Transformer
*	01-0129-05	Flow Meter Assembly
*	01-0129-58	Wire Harness, Cam
*	00-4517-01	Hose Clamp, Drain
*	01-0138-39	Back-up Battery

‡ Recommended Spare Parts
* Not Illustrated

Parts List - Tank Assembly

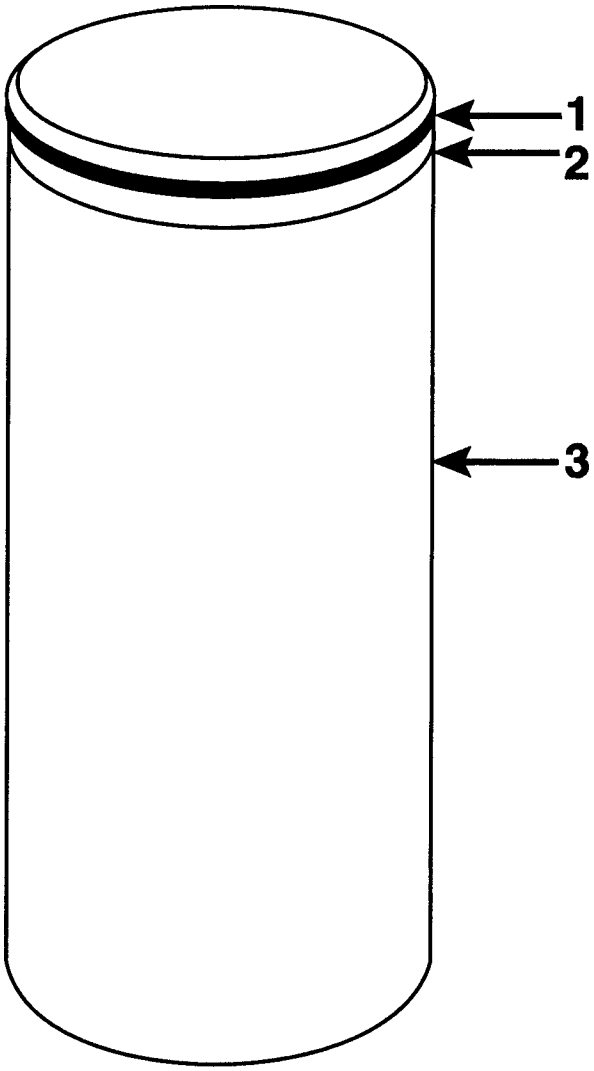


Item	Part Number	Description	Qty.
*	01-0064-63	Tank Assembly, 9" Aqua-Sensor®, Complete	
*	01-0101-35	Tank Assembly, 12" Aqua-Sensor, Complete	
*	01-0037-57	Tank Assembly, 9" Soft-Minder®, Complete	
*	01-0037-58	Tank Assembly, 12" Soft-Minder, Complete	
*	01-0042-97	Tank Replacement, 9" Aqua-Sensor, Empty	
*	01-0043-00	Tank Replacement, 12" Aqua-Sensor, Empty	
*	01-0042-98	Tank Replacement, 9" Soft-Minder, Empty	
*	01-0042-99	Tank Replacement, 12" Soft-Minder, Empty	
1	01-0072-81	Outlet Manifold	
2	01-0103-28	Aqua-Sensor Probe, 9"	1
	01-0103-29	Aqua-Sensor Probe, 12"	1
4	P0-2320-07	Inlet Manifold (25/Kit)	1
5	P0-3339-57	O-Ring (25/Kit)	1
6	P0-3044-11	O-Ring (25/Kit)	2
7	01-0072-82	Inlet Adaptor	1
8	01-0072-83	Nut, Plastic	2
9	01-0072-88	Cover Plate, Sensor	1
	01-0072-87	Cover Plate, Meter	1
10	01-0021-19	Plate	1
11	01-0054-50	Gasket	1
12	00-3232-05	Barrier	1
13	01-0072-84	Yoke, Sensor	1
	01-0072-85	Yoke, Meter	1
14	01-0019-46	Cover, 9"	1
	01-0019-47	Cover, 12"	1
15	00-4445-85	Crush Pad, 9"	1
	00-4445-46	Crush Pad, 12"	1
16	00-4419-97	Gasket, Ring, 9"	1
	00-4446-45	Gasket, Ring, 12"	1
17	00-4445-83	Well, 9"	1
	00-4446-44	Well, 12"	1
18	00-2202-36	Liner, 9"	1
	00-2202-22	Liner, 12"	1

Parts List - Salt Storage Tank

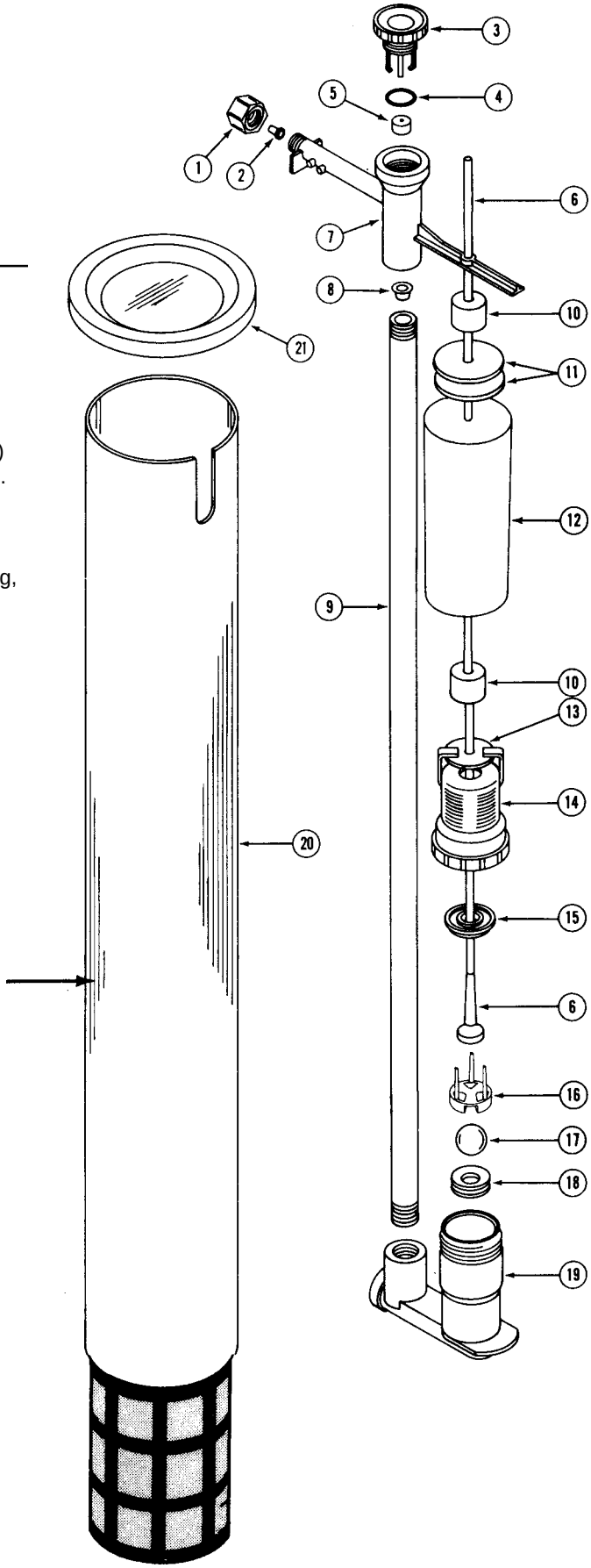
Item	Part Number	Description
—	00-4413-90	Brine System, 160 lb. Replacement
—	00-4418-86	Brine System, 250 lb. Replacement
—	00-4418-87	Brine System, 375 lb. Replacement
† 1	01-0048-70	Gold Band
2	00-3039-93	Cover with Band, 250 lb. (114 kg)
	00-4010-42	Cover with Band, 160 lb. (73 kg)
	00-3039-80	Cover with Band, 375 lb. (170 kg)
3	00-3040-10	Tank Only, 250 lb. (114 kg)
	00-4413-91	Tank Only, 160 lb. (73 kg)
	00-3039-75	Tank Only, 375 lb. (170 kg)
*	00-3044-30	Salt Plate, Plastic, 250 lb. (114 kg)
*	00-3044-39	Salt Plate, Plastic, 375 lb. (170 kg)

* Not Illustrated
† Order by footage required



Parts List - Brine Well & Float

Item	Part Number	Description
—	00-4418-88	Brine Valve Assembly
—	00-4011-41	Brine Valve Assy., Brine Tank, 160 lb.
1	00-3031-93	Plastic Nut, 5/16-inch
2	00-3031-92	Plastic Insert
3	00-4407-96	Refill Cap
‡4	00-3084-07	O-ring
‡5	00-4016-22	Flow Restrictor, No. 5, 0.45 gpm (170 lpm)
6	00-3400-14	Stem Seat Assy., 250 lb. (114 kg) & 375 lb. (170 kg)
7	00-4407-95	Refill Body
‡8	00-3325-28	Hat Screen
9	00-2234-35	Plastic Pipe, 1/4-inch NPT x 35 inches long, 250 lb. (114 kg) & 375 lb. (170 kg)
10	00-3047-03	Float Retainer (2 required)
11	00-3047-18	Float Weight, Stainless Steel (2)
12	00-4448-73	Float
13	00-3320-72	Screen Top Seal
14	00-4446-64	Filter Screen Cap
‡15	00-4444-96	Stem Seat
16	00-4473-92	Insert
17	00-4477-81	Air Eliminator Ball
‡18	00-3048-04	Ball Seat
19	00-5418-21	Float Valve Body with Ball Seat
	00-5418-34	Float Valve Body with Ball Seat, 150 lb. Brine Tank
20	00-3045-37	Brine Valve Chamber, 250 lb. (114 kg) & 375 lb. (170 kg) Salt Storage Tank
	00-4413-92	Brine Valve Chamber, 160 lb. (Shown)
21	00-3046-06	Cap, Brine Valve Chamber
*	00-4463-88	Screw, St. Steel, Brine Valve Chamber
*	00-4463-89	Nut, St. Steel, Brine Valve Chamber



* Not Illustrated
‡ Recommended Spare Parts

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